University of Saskatchewan

PRESIDENT'S REPORT

For the Year 1920-1921

SASKATOON
1922

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Report to Convocation

Mr. Chancellor and
Members of Convocation:

In 1912 the first degrees in course were conferred upon two women and five men, all in Arts. In 1921, 35 women and 65 men receive degrees in Arts, Science, Agriculture, Law and Engineering. Certificates in Pharmacy, Household Science and Agriculture are granted to 54 others—154 in all.

The attendance shows similar gains. The session 1909-10 opened with seventy students in Arts; that of 1920-21 has closed with 897 enrolled in the regular courses, 239 taking evening classes and teachers' courses at the Summer School—1136. To this number should be added those who took Short Courses at the University and in other parts of the Province where special instruction was given for periods varying from three days to three weeks. To give an adequate idea of the work of the University, one should direct attention to the varied and increasing activities of the Extension Department in Agriculture; of the Homemakers' Clubs; of the numerous Conventions, Conferences, Meetings and Special Courses held at the University in which its members took an important part. In one week no less than three of these Extension activities were being carried on at the University in addition to the regular classes.

During the summer the Editors of Weekly Newspapers, Members of the Homemakers' Clubs, Farm Girls in Conference, Teachers in Summer School, Scout Leaders, Members of the Engineering Institute as well as Technical Agriculturalists were entertained in the Residences while they met in Conferences or in Classes. It is difficult to give an accurate and an adequate representation of the manifold activities of the University, on the Campus or in the Province, or of the effectiveness of its work.

Agriculture

The part which the University has taken in the development of Agriculture is not unknown. This year it has become to a greater degree than ever before, the scientific arm of the Province. It has been called upon to assist in solving those serious problems

which threaten the very existence of Agriculture in Southwestern Saskatchewan. The Scientists are to engage in a study of conditions; in a soil survey; in plant breeding; in the cultivation of more suitable crops; the prevention of disease; the eradication of weeds and the control of insects. Equally important tasks are being undertaken for the improvement of Live Stock and Poultry, and for development in Dairying.

Engineering

Within the year, the Engineering Departments have engaged in very important investigations. The best type of House Construction to conserve heat, has been the subject of investigation by Professor Greig's department. This department has in the past issued useful bulletins of plans of Farm Buildings; has investigated economic methods of fuel consumption as well as various problems relating to Gas Tractors and Farm Machinery.

A most serious problem confronts those parts of Western Canada where the soil is saturated with Alkali waters. Concrete placed in such soil decays. The Engineering Institute of Canada has become greatly interested in this problem. So have the Railways, the Cement Companies, the larger Cities and the Western Provinces. They have agreed to support a thorough and competent investigation. The Engineering Institute of Canada appointed a Committee of Engineers last year for this purpose. Substantial financial assistance has been promised by the great corporations. Already the Research Council of Canada has voted $5.000 for this work. From the first our Engineering staff has taken a very active part. Professor MacKenzie is Chairman of the Institute's Committee and Professor Williams has already done very valuable work in eliminating possible causes of this decay.

The chemical side of the problem is now being attacked, and during the next year or two much valuable information will doubtless be secured. It is a pleasure to note the cordial spirit of co-operation manifested by the representatives of the various Engineering interests. Not a little of the work has been done here, and more will be done. The needs of each locality will, however, be thoroughly considered, and the cooperation of all is essential.

The magnitude of the problem is self-evident. Tens of millions have been invested in buildings resting on concrete foundations. Millions have been sunk in sewers and aqueducts. The colossal irrigation systems represent equally great sums.

In another sphere the University has been called to aid the Province. The Bureau of Industries under the supervision of the Hon. Mr. Dunning and the direction of Mr. Molloy holds that the Clay Resources of this Province are of vital importance.

The absence of timber, the need for cheaper materials for construction, all point to the clays. A number of brick plants were begun some years ago, but the War caught them before they were well established. Now scientific examination of materials and scientific methods of mixing and firing are essential if the industries are to revive and flourish.

The possibility of the development of a Pottery industry is more than a dream.

The University has appointed a Ceramic Engineer who will in co-operation with the Bureau of Industries devote his energies to these problems for the first two or three years, and, if conditions justify, to build up a department of Ceramic Engineering within the University where capable men may be trained.

The University proposes to perform a similar service for the North Country. The development of Northern Manitoba, the Copper deposits known to exist in Saskatchewan near the boundary, the presence of gold and reports of lignite, call for the services of experts. A department of Geology is to be established. It will not only round out the Scientific departments of the University, but should give material assistance in the development of the North Country.

Within the University

Perhaps the most notable feature of the year's work within the University has been the return to normal conditions from the turmoil and restlessness of the war. Increased numbers appeared in all the courses except the Special Vocational Courses for disabled men and the Associate Course in Agriculture. In all better work was done, and failures were fewer.

The Special Courses and the Higher Classes are filling up. Much emphasis has been placed upon laboratory work in the Scientific Departments, and upon essays, tutorials and exercises in the Humanities. Within the Arts Faculty, Military History and Science and Physical Training are to be accepted as electives. Pharmacy proposes to put on a special course for students who have not reached Matriculation standing. Accounting is attracting an increasing number of students who look forward to business, while Household Science is merging from a department into a School with ambitions to reach the Faculty stage.

In Agriculture the tide is flowing towards the Degree course. Hereafter separate classes will be conducted in the Agricultural as well as the Scientific subjects for Degree and Associate students. The numbers have become so large that sectioning has become necessary. The way will still be open for men who begin in the

Associate Course to transfer to the Degree Course. In the past, several of the best degree men began in the Associate Course. Three of the four winners of the Scott Scholarship, had transferred from the Associate to the Degree Course.

The requirements for a degree in Agriculture have been simplified, permitting more concentration on some subjects and greater choice of electives in others.

In Engineering, the Civil course has attracted men who are going ultimately into Mechanical or Electrical. Hereafter a third year will be added to the first two years common to the Civil, Electrical and Mechanical Courses, permitting men to begin specializing in Electrical and Mechanical Engineering.

In Law there has been a notable increase in the number of students who are devoting all their time in the First and Second years to their class work, and are postponing their entry into the offices until a later date. The Faculty is following the Benchers in requiring Senior Matriculation or a year in Arts for admission to Law.

Buildings

The Physics Building has been practically completed. It is a most substantial structure and will provide much needed accommodation for the Physical and Biological departments. There will also be some accommodation for other departments.

The Greenhouses, the prettiest buildings on the Campus, have been completed and now house the laboratories for Plant Pathology, Bacteriology, Human and Animal Pathology.

To the Engineering Building, an extension for a tractor laboratory was built three years ago. It has proved so useful that an extension to the other wing will be added this year for the accommodation of the Civil and other Engineering departments. Here it is hoped to provide adequate accommodation for the Engineering Laboratory investigations.

In the Chemistry department last session the enrollment in the different classes was over 520. One student may be enrolled in more than one class. The class rooms are too small and too few; the laboratories so overcrowded that three men were assigned to one desk, and the lack of ventilation so great that students were sometimes overcome. A Chemistry building is being planned and must be built as soon as possible.

An extension to Qu'Appelle Hall, to cost about $100,000 will complete that building and accommodate about 100 more students.

The Arts Building, the crown of our present group, has long

been hoped for and partially promised. It will house the Business Offices, the Library, the Museum, provide a number of large classrooms, several smaller classrooms, and the much needed offices for the staff and student activities. When to these the Gymnasium has been added and the necessary extension to the Power House for heating, the major part of our building programme will be completed. It will bring our total expenditures somewhere near to that of the Manitoba Agricultural College. Our group will, however, house Arts, Science, Law, Engineering, Pharmacy, Accounting, and Household Science as well as Agriculture.

Until the arrival of the third stage of Institutional development, through which the larger Universities are now passing, this University should have a breathing spell more or less brief. Last year the large increase in numbers and activities suddenly thrust it from the first stage of unit classes, single instructors and personal administration, to the second stage where classes must be divided, instruction coordinated, administration delegated, equipment and accommodation specialized.

We are meeting the demands of this trying stage of our development and we are able to render some service to the Province, because of the support which we have received from the people of the Province through the Legislature and the Government. The Premier, the Provincial Treasurer and their colleagues have followed an enlightened policy of support and of requirement towards the University. They have not refrained from requiring the University to undertake difficult public services, but they have accorded generous financial support, and have kept the University free from political influences.

Gifts

During the year the University received from Mrs. Willing the very valuable collection of Insects and Plants of Western Canada, which her husband, the late Professor Willing, had made, and which he wished given to the University. This rare and valuable collection will be known as the "Professor Willing Memorial Collection."

From the colleagues, students and friends of the late Professor Bateman, $1000 has been received for a Memorial Prize.

The Daughters of the Empire have given a scholarship of the value of $1400 for graduate work and a Bursary of $250 a year, with $30 added by the Governors open to undergraduates. In each case a preference is to be given to returned soldiers or their children.

From Mr. John Dixon, Mr. A. H. Hanson and the Phar-

maceutical Association, prizes of $100 each have been received.

From the War Trophies Committee three aeroplanes and four machine guns have been received.

The Khaki University and Y.M.C.A., through President Tory, has offered this University $12,000 to be known as the Khaki University and Y.M.C.A. Memorial Scholarship Fund, to be used as scholarships or temporary loans to assist Returned Men or their sons or daughters through their University Course.

Memorial to Soldier Students

A suitable memorial to commemorate the services of our student soldiers is still to be erected.

Some recognition of the services of soldiers has already been given by the University. It placed the names of all members who enlisted on the scrolls in the College Building; gave to each student interrupting his course by enlisting, one year's credit towards a degree; provided special facilities for returned men; assisted in giving vocational courses to over 700 disabled soldiers; granted to returned men numbering 175 in 1919-20, and 152 in 1920-21, exemption from fees totalling over $10,000 in two years. There still remains to be provided a memorial more enduring than brass and worthy of the men and their services.

Student Activities

There has been a sudden expansion of Student Activities since the release from the War. This year, the student paper, "The Sheaf," has expanded from a monthly into a very creditable weekly, well edited, well managed, and a credit to the University.

In Debating there has been great activity. The contests between the Colleges has been keen. Emmanuel won the Hill Cup and added another win to last year's.

The Inter-Varsity debates resulted in a double win for Saskatchewan, with Alberta second.

Inter-Varsity Sports opened with a Field Day, held here at the opening of the session—Manitoba carrying off nearly all the first prizes. In Soccer Saskatchewan won from Alberta; and in Boys' Hockey the Halpenny Cup came to Saskatchewan. In Girls' Hockey Saskatchewan also scored.

The contests between the Colleges within the University were spirited and the interest great. Perhaps one of the most successful events of the year was the Swimming Tournament.

The Students have reorganized their Representative Council

and made it a more effective instrument in controlling and co-ordinating the different student activities and expenditures.

In their various activities, the students have displayed good business capacity and they have without doubt received a training that will prove serviceable in after life.

Possibly our students take more readily to business and organization and less kindly to reading and the grind of laboratory and study than our British cousins. Possibly we over-emphasize sport and amusement and pay too little attention to scholastic distinction and intellectual ability.

While I think we should continue to encourage and assist sport and particularly to get as many students as possible interested and active in at least one form of sport, still we should ever remember that there is only one time and one place for the cultivation of the mind and the attainment of scholarship, and that is within the University. As a people we should pay more court to learning and accord greater honour to those who are highly distinguished in ability and scholarship.

There is another side of the student's life which should receive greater attention. In the larger cities and the older civilizations the student passes his days amid literary and artistic influences that leave an indelible impression upon him. Here, the literary atmosphere is rare. Paintings and statuary almost unknown; Architecture represented even imperfectly only in a few buildings; he makes a slight but passing acquaintance with Music and Drama.

It is difficult to overestimate the value of Literature and the Fine Arts in giving that tincture of Culture that distinguishes the gentleman from the savage. This generation is fortunate in receiving from other lands representatives of older cultures who have come to live with us, but a time may come when this enrichment will cease.

Our young men and women should be encouraged to continue their studies abroad. To this end we should approve and support the establishment and use of such Travelling Scholarships as the Rhodes, the I. O. D. E. Graduate Scholarships, the Paris Scholarships recently established by the Provincial Government; the 1851 Exhibition Science Scholarship, the Research Fellowships.

We should also do our utmost to accumulate artistic and literary treasures such as may be found today in the older parts of Canada—for example in ancient Laval University over which our distinguished visitor presided as Rector for a triple period of service.

In this Province a few collections of notable pictures are being

made. In the Provincial Collection there is a portrait of Hon. George Brown, by Herkomer, one of the last of that great portrait painter. Recently a portrait of Sir Richard Lake, painted by Lazlo has been placed in Government House. These two paintings are worthy of a place in any of the great galleries. Private collections of note are being made in Regina and Moose Jaw.

In Saskatoon, the Collegiate Institute conceived the happy idea of commemorating the deeds of their soldier students by a collection of Canadian Paintings. They have made an excellent beginning, and recently placed them, together with the paintings from the National Gallery, on exhibition for the public.

The public interest in Music is much keener, and greater progress has been made in educating the taste and appreciation of the people. The remarkable success of the Provincial Musical Festivals, the excellence of the work of the various Choral Societies choirs and soloists indicate an appreciation and skill that would do credit to a Province whose pioneer days had been lost in the mist of the past.

Hitherto, the University has followed, not led. It has manifested a benevolent interest in the Provincial Festivals and has hoped for fine paintings. It is well for us to remember that the University must lead in the recognition of the Fine Arts, not only as instruments of culture but as the expression of the highest forms of human genius.

Within the University, the Choral Society, under the skilful leadership of Dr. Manning, have become a most effective instrument for the development of musical taste and appreciation among the students.

Changes

The year has witnessed many changes in the Staff—the departure of Professor Tisdale to an important commercial position; of Professor MacGregor Smith to the headship of a department in Alberta; of Professor Bracken to become President of the Manitoba Agricultural College. They have all given this University good service and been very popular teachers. Professor Bracken has become recognized throughout Canada as a leading authority in his subject. In his new field, his many admirable qualities will have free scope, and should make him as distinguished as an administrator as he has been as teacher and investigator.

We welcome the return of Professor Basterfield in Chemistry, of Professor Cameron to teaching in Zoology; the arrival of Professor Winters to succeed Professor Tisdale; of Professor Champlin to take up Professor Bracken's work; of Professor Kirk to carry on

the Bracken tradition; of Professor Williams in Engineering; of Professor Harrington in Physics; of Professor Muller in French; Professor Barnett in Mathematics; of Professor Bateman to carry on the tradition of an honoured name; of Miss Patrick, Miss Carr, Miss Acason, Mr. Code, Mr. Harrington and Mr. Woods to assist in the work of instruction. The cosmopolitan character of the people of the Province is reflected in the University—in the Staff as well as in the student body. The many changes of the years since the War have accentuated it.

In some respect it compensates for travel. The students have the benefit of receiving instruction from men and women representing many and varied traditions. France, England and Scotland, Wales, Ireland and Switzerland, every province to the east of us in Canada, several States to the south have contributed to our staff. In the older Universities of Europe—Paris, Oxford, Dublin, Edinburgh, Aberdeen, Manchester, London, Bristol, in the Universities of Germany and the graduate schools of the United States—Harvard, Yale, Columbia, Chicago, Cornell; even in India have our professors studied and worked. At least ten of the Colleges and Universities of Canada have contributed to the cause of learning here.

One may well ask. Can there arise from such heterogeneous traditions of scholarship, training and national service, a type worthy of the best traditions of the old land and devoted to the needs of the new? Can high standards of scholarship and true ideals of service be formulated with clearness and sustained with power, where traditions and experiences are so many and so varied?

I think the careful observer will be surprised at the closeness of the approach of this University to the Canadian type, notwithstanding the fewness of its years and the variety of the influences that have been at work. The Canadian stream of University life, or rather the two streams of University life, took their origin in two sources—both clerical in character—in the King's Colleges in Nova Scotia, New Brunswick and Toronto which copied Oxford, and the Seminary at Quebec which reflected Paris—possibly the inspirer also of Oxford.

The Oxford tradition was checked and marred by sectarian strife. Its opponents appealed to Scotland and New England for men and ideas until sectarian bitterness drove politicians and neutrals to the experiment made in London. There an examining University had been set up. It was non-sectarian in character and control, according equal liberty to all to teach when and how they pleased, provided they met a severe examination test. In Halifax, in Toronto and in Winnipeg, the London idea began an unequal struggle. It prepared the way for the conception of a

University supported, controlled and devoted exclusively to the service of the state—a University at first resentful and antagonistic to ecclesiastical claims and criticisms, then indifferent, and now respectful and appreciative of religious rather than sectarian interests.

The idea of the State University seems to have found in Thomas Jefferson an advocate, and in the University of Virginia, an instrument for its expression in America. What Virginia preached, Michigan and her sisters practised, until the last fifty years have witnessed a development and extension of University education unequalled since the marvellous days of the Universities in the Middle Ages.

In Toronto, the struggle between the different University ideals has been keen and beneficent. In the Maritime Provinces, more bitter and destructive. The conception of the modern State University, absorbing but not destroying the best of the past, pervaded the report of the Toronto Commission of 1905 and was written into the Act of 1906. That Act has been reproduced with great particularity in the Alberta and Saskatchewan Acts of 1907 and later in the revised Acts of British Columbia and Manitoba. The Toronto Act represents an attempt to harmonize the Oxford and the Scottish traditions as they were represented in the denominational Colleges with the principles of State supremacy and support. It bears within it the imperfections due to the conflicts of the Churches and the local interests which supported them. The new Western Universities of British Columbia, Alberta and Saskatchewan were free from such embarrassments and began their existence with a single aim—to serve the State, unmindful of sectarian bias and urban rivalries. Hitherto they have resisted all attempts to embroil them in sectarian strife or to divide them into fragments to be flung to ravenous towns. Their rapid growth in influence and in service has been due to their singleness of purpose, their undivided efforts and to the large and liberal measure of State support with State control which they have received.

With this background, Saskatchewan University has elaborated a system of government, has formulated courses of study, has established standards of scholarship, has adopted methods of instruction, and has reached out to serve the different interests of the Province in a manner which, we believe, the competent observer will declare to be faithful to the best traditions of the Universities of Canada.

If one were to particularize, one might state that in the Arts Faculty, the Faculty that gives a University character and life, the Humanities reflect more of the traditions of the British and

of the Latin peoples; while the Sciences, with their extensive use of laboratories as instruments of instruction, and their emphasis upon research, not only as a goal but as a method of instruction, reflect the German tradition as interpreted by the Graduate Schools of the older American Universities.

In Agriculture, Guelph's experiment in the trade school idea of a purely practical or vocational training, still dominates the course for boys who wish to improve their farming practice. Gradually the more thorough training in Agricultural Science has followed in the footsteps of the older professional schools such as Medicine. This phase of Agricultural work receives not a little of its stimulus and direction from the older Agricultural Colleges of the United States and to a less degree from the classic experiments in Britain.

In Law, this University has had to choose between three traditions—that of Osgoode Hall where the lectures of the classroom have superseded the personal instruction which the solicitor was supposed to give his apprentice in the office; that of Oxford, where Jurisprudence, the Law of Nations were treated as Liberal studies and pursued with that detatchment from professional interests that characterized the Schools of History and of Science; and, finally, that of Harvard, where Law has been placed upon a parity with Medicine and is studied and taught in accordance with the best scientific traditions, and for strictly professional purposes. Saskatchewan's practice follows Harvard's with a tincture of Oxford, and hitherto has not been unmindful of the necessities of the offices, though the urgency of this last consideration is rapidly decreasing.

Of the other professional schools, little more may at present be said than that they are dominated by the idea that their object is to train for a profession and to give a training that will be thorough, and will not only impart the technical skill required for present needs, but develop a power and methods that will enable the student to grow with his profession; to solve problems and overcome difficulties unknown when he was at college.

Over twenty men have left the service of the University since the retirement in 1912 of Mr. Auld, the first to go. This year our ranks have been broken by death. After a brief illness, Professor Willing left us November 30th. He had come to the west from Toronto nearly forty years ago. From his entry with a surveying party, he had been a keen observer, a devoted servant and a lover of the West. Endowed with an unusual gift of close and exact observation, a retentive memory, and with the scientist's untiring zeal and questioning spirit, he made great use of his opportunities to attain an almost unrivalled knowledge

of the fauna and flora of Western Canada. Though his modesty prevented him from publishing and making known the richness of his information, he was recognised as one of the pioneer naturalists whose knowledge of the West was wide, exact and reliable. The very valuable collection of plants and insects which he made and presented to the University will be preserved as a memorial of his work and as a visible evidence of his learning and loving service.

His colleagues will long cherish the memories of his kindly ways, his delightful companionship, his modesty, his generosity in placing the stores of his knowledge and experience unreservedly at the service of every enquirer, whether student, farmer, teacher, boy scout or savant from abroad.

Suddenly death removed one of the oldest, best and truest of the friends of the University, in the person of Mr. McCraney. From the time of his election to the first Senate in 1907 to the end he took an active interest in every phase of the University's life.

A few weeks before his death he gave the students a very interesting address on the House of Commons, and shortly afterwards presided at a debate. His brief remarks on debating made a deep impression on those who heard him. He ever left the impress on his hearers of a wise, tolerant, sincere and upright man, who detested pretence and never swerved by so much as a hairbreadth from what he thought was the line of duty. From the meetings of the Senate, the life of the City and the councils of the Nation he will be greatly missed. His going leaves us poor in service but rich in the memories of a man great in uprightness and honour.

With great regret may I refer to the impending retirement of Bishop Newnham. So long has he served, and so well, that he has become part of the very being of the West. His interest in education and his active support of every good cause has given him a secure place in the esteem and affection of the people of this Province. We of the University will always retain the kindliest memories of him and his service, and we hope that he and Mrs. Newnham may enjoy many pleasant years undisturbed by the heavy burdens of office.

We cannot witness the going of Principal Trench of Emmanuel College with the feeling that long years of service have earned for him the right to freedom from office. His two short years of office have shown the quality of the man, and deeply intensify our regrets at his going.

WALTER C. MURRAY

Registrar's Report

Summer School

	Teachers' Course	Degree
1916	123	
1917	106	
1918	60	40
1919	77	80
1920	71	81

Comparative Attendance

	Summer	Arts Men	Arts Women	Agriculture Deg.	Agriculture Assoc.	Law	Engineering	Pharmacy	Accting	Totals
1909–10		58	12							70
1910–11		88	20							108
1911–12		122	28							150
1912–13		144	34	2	68					248
1913–14		171	62	12	89	21	6	21		382
1914–15		200	75	18	94	33	16	9		445
1915–16		164	53	20	118	27	6	18		406
1916–17		104	47	25	79	17	0	19		291
1917–18		116	92	33	110	23	0	17	17	407
1918–19	40	132	110	38	101	33	0	18	16	488
1919–20	80	223	153	59	187	36	16	69	31	854
1920–21	81	227	199	68	108	52	36	61	35	867

	Summer Teachers	Soldiers' Vocational	Short Courses	Night Classes	Totals
1918–19	60	225	255		540
1919–20	77	364	250	152	843
1920–21	71	115		198	384

In this and the following tables the information given does not apply to those taking the Summer Course, Night Classes or Short Courses.

Nationalities

Over Seventeen nationalities have representatives. They may be grouped as follows:

	Canadian	British	United States	Slavs	Scandinavian	Teutonic	Others
1917	120	118	10	10	17	8	8
1918	182	154	22	14	16	7	18
1919	218	144	22	15	15	5	21
1920	394	222	42				118
1921	390	221	43	9	15	8	

Ages

	16–20	21–25	26–30	30—
1917	90	124	37	42
1918	175	117	74	42
1919	231	105	53	51
1920	243	295	138	70
1921	311	266	102	60

Religious Denominations

	Anglicans	*Baptists*	*Methodists*	*Presbyterians*	*Roman Catholics*	*Not Stated*
1917	39	11	73	124	15	29
1918	82	13	118	138	17	39
1919	72	18	107	167	20	56
1920	108	23	192	287	32	132
1921	96	20	174	306	37	134

Places of Residence

	C.P.R. Main Line and South	*C.N.R. Main Line and North*	*Between C.P. and C.N.*	*Other Provinces*	*Foreign*
1917	54	36	168	15	18
1918	75	35	234	28	25
1919	69	56	282	27	6
1920	166	126	372	55	55
1921	192	119	341	56	59

Professional Examinations

The University conducts the examinations required for licenses to practise in Accounting, Architecture, Pharmacy, Dentistry, Medicine, Nursing, Optometry and Veterinary Science.

The number of candidates examined and passed are as follows:

Chartered Accountants

	Examined	*Passed*
1913	34	14
1914	39	18
1915	27	15
1916	39	14
1917	36	15
1918	42	15
1919	39	15
1920	81	34
1921	59	30

Architects

	Applied	*Admitted*
1913–18	52	28
1921	1	1

Pharmacists

	Examined	*Passed*
1914	21	20
1915	9	8
1916	18	16
1917	19	17
1918	17	16
1919	18	9
1920	69	45
1921	61	45

Veterinarians

	Examined	*Passed*
1915	29	28
1916	6	6
1917	5	3
1918	9	5
1919	9	6
1920	13	11
1921	6	5

Dentists

	Examined	*Passed*
1918	23	16
1919	23	6
1920	19	12
1921	7	3

Physicians

	Examined	*Passed*
1919	8	7
1920	20	17
1921	6	3

Nurses

	Examined	*Passed*
1919	9	6
1920	35	21
1921	42	33

Optometrists

	Examined	*Passed*
1920	5	2
1921	9	3

Graduates

Degrees	1912	'13	'14	'15	'16	'17	'18	'19	'20	'21	*Total*
B.A.	7	21	20	32	37	31	34	18	29	63	292
B.Sc.	–	1	2	1	1	1	4	2	4	7	23
B.S.A.	–	–	–	1	2	5	4	4	3	9	28
B.E.	–	–	–	–	3	–	–	–	–	2	5
LL.B.	–	–	–	8	8	7	5	7	5	12	52
M.A.	1	–	2	3	4	1	1	2	3	3	20
M.S.A.									1		1
Total	8	22	24	45	55	45	48	32	45	96	421
Certificates											
Agriculture	–	–	–	24	10	6	8	10	11	10	74
Pharmacy	–	–	20	9	18	19	17	9	45	38	175
Household Sc.	–	–	–	–	–	–	–	–	–	6	6
Grand Total	8	22	44	78	83	70	73	52	101	150	681

Report of the Advisory Council

The Council met in Dean Rutherford's office at 2 p.m., January 11th, 1921, with the following members present: Angus McKay, Hon. C. M. Hamilton, J. A. Maharg, John Dixon, President Murray and Dean Rutherford. A letter from Mr. Youngblud regretted inability to be present. The Council listened to Dean Rutherford's report on the work of the College for the year, and after an interesting discussion the report was received and the Council adjourned.

Your representative wishes to report to you a few of the many interesting and valuable features noted in the Dean's report.

The Dean drew attention to the work of the College which is of a threefold in nature—teaching at the University, research and investigation, and extension. It was pointed out that the numbers in attendance are slightly in excess of last year. The registration in the Degree Course is on the increase and there is a gradual improvement in the quality of the students, due to better preparation before entering. The Degree and Associate Courses are being separated, the first being of a more scientific character to fit graduates more particularly for teaching, investigation and administration work, and the Associate Course more practical, to suit the needs of the young men who purpose making farming their life work. This latter Course requires no matriculation examination for entrance. The Course opens about November 1st and closes the last of March. The student must be sixteen years of age, have had at least one year's farming experience and have sufficient education to enable him to profit by the lectures and demonstrations.

The Council and the University authorities regret the lack of housing accommodation for the students. The attendance has so increased that it is taxing the authorities to provide lecture rooms, laboratories and staff. The Council was pleased to hear of the very generous treatment by the Government in the matter of providing funds for the expansion that is necessary to provide for the educational needs of the young men and women of Saskatchewan.

The Extension work is receiving careful attention. We were much impressed with the feature known as the Camp Work for Boys provided in co-operation with Regina and Saskatoon Exhibition Boards and for the girls by the University. We wondered why the Agricultural Societies had not taken more interest in sending girl delegates to the Camp at the University in June, where the facilities for housing are the best and where an excellent

program, suited to their needs, is put on. The program consists of practical work in household science, together with hygiene, games, swimming, community singing and folk dancing. The Department of Agriculture pays the railway fare and the Society furnishes the girl with sufficient to pay her board at one dollar per day. We commend this work to your Societies. There has been marked interest in every line of extension endeavor, not only that carried on in connection with your Societies directly, but with other organizations, at conferences, social functions and on the Better Farming Train. An increase in the grant has been obtained in this year's budget to enable the Department to take care of the natural increase in work and for new enterprises that may be engaged in.

It is recognized by all who have to do with agriculture today that a profitable and permanent system cannot be evolved without careful research investigation. We have been pioneering, but the time has come when a stock-taking of our soil resource and our methods for developing and conserving it must be made, and a sane, safe plan substituted for the one employed by many at the present time. We are pleased to note the many lines of research and investigation that are being carried on now at the University. Much good work has been and is now being done in the matter of cultivation, selection and improvement of crops, rotations and soil fertility. Phases of the rust problem have been detailed to specially trained men for study and research. Greenhouses and other facilities have been provided and already the bounds of knowledge in respect to rust have been greatly extended. Work in plant breeding is under way and will no doubt bring rich rewards, not only to the investigator, but to the people on the land and to the Province generally. Valuable strains of grains, grasses, clovers and other plants are being sought out and purified and then increased in quantity to be distributed through the medium of your Societies. We were much impressed with the valuable work being done with the live stock. The herds and flocks and studs are being improved through the continued use of good sires and strains carrying improved characteristics are being carefully sought out. The dairy heifers are producing more milk and more butter fat than their dams, and in beef cattle the young Shorthorns especially give promise of excelling their forbears. Families of superior excellence will in time be established by this careful selection, whose blood will be diffused through the herds and flocks and studs of the province and in this way a higher standard of excellence will be established. We were especially pleased to hear more about the plan for horse improvement and to see the young Clydesdale colts that have been recently brought from Scotland to the University for the purpose of setting up a high standard of excellence, and also to effect improvement by mating them with

the best Clydesdale mares of the Province to increase the number of high class breeding stallions. The work in poultry breeding and selection is, in our opinion, of very great value to you and your members. Much improvement in egg laying has been effected in the University flocks, and much good blood is being distributed throughout the Province. The extension work in this Department is proving of immense value to flock owners.

We also wish to note an important piece of investigation work being conducted to ascertain the most efficient wall construction for buildings on the prairies. No results have yet been given out but we have no doubt that valuable information in this respect will be forthcoming. Valuable work is being done in connection with the causes of deterioration in concrete work on the prairies due to the presence of destructive characters in our soils, with a view to finding out how to prevent such. These are only a few of the many investigations that are being conducted by the members of the staff of the University to enable you to make a better living and to build up a happy home and community life on the prairies.

It is reported that from March 1917 until September 1920, more than seven hundred returned, disabled soldiers were given training to fit them to re-enter civil life unimpaired for its duties. Much credit is due to Prof. Greig for the very successful manner in which the work was conducted. Not a complaint came from the men during their courses and practically all who passed through his hands are rendering good service to the communities in which they are located.

We heard with regret of a number of losses to the staff during the year. Prof. Bracken, to whom we had all become much attached, resigned to accept the responsible position as Principal of Manitoba Agricultural College. Prof. Bracken had, during his life with the College, done valuable work in Field Husbandry. His leaving was felt to be a distinct loss. Prof. Champlin, of the South Dakota Agricultural College, who has had valuable experience in dry farming with the U. S. Department of Agriculture and the Dakota College and Experiment Station, has come to assume the important duties laid down by Mr. Bracken, and he is being ably assisted by Prof. Kirk and Mr. Harrington, who have both grown up in the Department, and by Prof. Hanson who came from the University of Illinois to carry on work in soils.

Prof. Tisdale resigned to take a position with the Canadian Wool Growers. Prof. Winters, a graduate of Minnesota and post graduate of Ames, Iowa, has been secured to assist Prof. Shaw in Animal Husbandry.

Prof. Smith resigned to assume the headship of the Agri-

cultural Engineering Department of the University of Alberta.

Mr. K. W. Gordon, a graduate of Manitoba, has joined the Extension Department to assist Mr. Rayner and Miss Esther Thompson to assist Miss DeLury.

I regret exceedingly to report the removal by death of Prof. T. N. Willing. I had known him from the early days. He pioneered in the West, as many of the rest of us have done. He was always a keen observer and a student of a high order. Because of his knowledge of weeds, insects and plant and animal life generally he was employed on the staff of the Department of Agriculture, and when the College was established he came with it to the University, where he lectured in Natural History to the students in Agriculture and to the teachers in training in the Normal School. He was also curator to the museum. In the early days I had many trips with Mr. Willing, visiting the Agricultural Societies, and I found him not only a man well versed in his particular subject but a man of fine sensibilities—a gentleman and a friend. I am sure you will join with me in expressing to Mrs. Willing and her sons our deepest sympathy in their bereavement. They and we have suffered a great loss in the death of Prof. Willing.

It is the hope of the Council that the fine spirit of co-operation now existing between the Department of Agriculture, the College and the Agricultural Societies may continue, and that the next decade may see even greater strides in the improvement of our agriculture than that which has been noticed during the decade just closed.

(Signed) ANGUS McKAY,
Chairman.

Extension Work

The report of the Director of Agricultural Extension, Mr. Rayner, has been published by the Department of Agriculture. Miss DeLury, Director of Homemakers' Work, presented the following to the Homemakers' Convention:

I have much pleasure in submitting our tenth Annual Report.

When last year's report was presented to you, it was with the expressed hope that we should have a surcrease from the labors caused by abnormal conditions such as we had been coping with for several years, and owing to which our regular community work had to be a second consideration. But even while expressing the hope we were rather dubious of its fulfilment, because of the uncertain crop outlook at the time, and this year has had to be a continuation of similar work in relieving conditions caused by crop failures. The manner of carrying on this work shows a vast gain in organization methods, probably the result of war work experiences. It is impossible to compute in cold figures the work done by our clubs, seeing that it had to be done in a variety of ways. Sufficient be it to say that every club contributed wholeheartedly to relief both at home and abroad.

For all this, community effort has lost none of its vitality but rather is gaining in enterprise and enthusiasm.

Many of the things that were pressing problems in the early stages of our existence as an organization are now almost ceasing to be problems, so well have they been met.

For instance, from nearly one hundred club districts reported, very few are situated badly for care of the sick and medical attendance. Better even than this, our people are continuing to get and receive instruction for the care of the sick, realising that much of the doctors' and nurses' care is rendered null if the home-keeper lacks the necessary knowledge and skill. This is not to say that things cannot be bettered, and we must still keep on. But changes brought about for community nursing, establishment of hospitals, medical inspections of schools and such like are almost past belief. In this movement the Homemakers' Clubs were, I believe, the pioneers, and they now have the satisfaction of seeing this work in the skilled hands of one efficient nursing staff in connection with the Provincial Bureau of Health, and another with the Department of Education, with both of which we co-operate, thus making the work of all more efficient.

The rest-room work still goes on. The idea is enlarging itself

with the Community Club-room, and many plans are afoot among the Homemakers for Memorial Community Houses. We are expecting very interesting developments this coming year, and hope for some good reports in connection with this at the next convention. From Clubs reported 37 have rest-rooms and in most of the cases the need is not strongly felt.

The school lunch is now an accomplished and wide-spread fact, another movement in which the Homemakers were the pioneers in this province. Now this work is carried on in a systematic way with the Department of Household Science, established in connection with the Department of Education. School sanitation is also taken care of by the Department of Hygiene, and in all these departments we can make work more efficient by our inspiration and our co-operation.

Regarding libraries—twenty-nine permanent ones have been established and assisted by the University grant, and we have forty-six free circulating libraries in use.

Actual extension work has been more active and intensive than in any previous year. We have carried on at various points sixty-one short courses varying in length from two days to one week—in most cases one week. These courses included mostly sewing and millinery courses, household science courses and home nursing, along with varied subjects of interest wherever possible. In addition to this 36 clubs have had single lectures, sometimes afternoon and evening lectures, thus making a total of 97 centres visited and approximately 5000 people who have received the benefit.

Besides, our people judged at 22 Fairs and at some of these Fairs gave addresses. We also put on a week's course at five different points for the wives of the soldier settlers, thus to assist the Soldiers' Settlement Board. The latter courses were carried on by the University Staff, but in such cases we feel that we are always doing it in the name of the Homemakers' Clubs, and these courses have not begun to do the work of helping the new settlers in the valuable way that individual Homemakers' Clubs have done, as I know by the reports received. In this, as in all things that call for it, the Club members are always ready to extend the warmest-hearted kind of hospitality and especially to the stranger and the new-comer.

The University Staff has also given a course of six weeks for soldiers' dependents and we are making them welcome guests at the Convention.

As an organization we have always managed to work with other organizations who are striving to bring about the same things

as we are, in however different manner. We feel that all are needed and that we can best keep the general good by preserving always the kindliest spirit of co-operation. I trust that through no act or word of ours this friendly spirit will ever cease to be.

I have asked the individual Clubs for suggestions for the successful carrying on of the work. I recall the advice of one Club was to "Keep on," and we can have no better watchword for the coming year, if we keep in mind all that "Keeping on" involves.

Publications

The Royal Society of Canada asked for a list of the publications on science of members of the University Staff. The list given below will be supplemented in later reports.

W. P. THOMPSON, B.A. (Tor.), Ph.D. (Harv.).

1. The Origin of Ray Tracheids in the Coniferae.
   Bot. Gaz. 50. 101–116. Aug. 1910.
2. The Origin of the Multiseriate Ray of the Dicotyledons.
   Ann. Bot. 25. 1005–1014. Oct. 1911.
3. Ray Tracheids in Abies.
   Bot. Gaz. 53. 331–338. April 1912.
4. The Structure of the Stomata in Certain Cretaceous Conifers.
   Bot. Gaz. 54. 63–68. July 1912.
5. The Artificial Production of Aleurone Grains.
   Bot. Gaz. 54. 336–339. Oct. 1912.
6. The Anatomy and Relationships of the Gnetales. I. Ephedra.
   Ann. Bot. 26. 1077–1104. Oct. 1912.
7. Preliminary Note on the Morphology of Gnetum.
   Amer. Journ. Bot. 2. 161. April 1915.
8. The Morphology and Affinities of Gnetum.
   Amer. Journ. Bot. 4. 135–184. April 1916.
9. Independent Evolution of Vessels in Gnetales and Angiosperms.
   Bot. Gaz. 65. 83–91. Jan. 1918.
10. Companion Cells in the Bast of Gnetum and Angiosperms.
    Bot. Gaz. 68. 451–459. Dec. 1919.
11. The Canons of Comparative Anatomy.
    Science N.S. 57. 517–519. May 1918.
12. The Canons of Comparative Anatomy II.
    Science N.S. 58. 371–373. Oct. 1918.
13. The Inheritance of the Length of the Flowering and Ripening Periods in Wheat.
    Trans. Roy. Soc. Can. 12. 69–87. 1918.
14. The Inheritance of Earliness and Lateness in Wheat.
    Trans. Roy. Soc. Can. 13. 143–162. 1919.
15. Scientific Research in Relation to Agricultural Problems.
    Science N.S. 52. 301–308. Oct. 1920.
    (**In Collaboration with T. W. Bailey.**)
16. Are Tetracentron, Trochodendron and Drimys Specialized or Primitive Types.
    Memoir N.Y. Bot. Garden. 6. 27–32. 1916.
17. Is the Vesselless Secondary Xylem of Certain Angiosperms a Retention of Primitive Structure?
    Science. N.S. 53. Mar. 1916.
18. Additional notes on the Angiosperms in which Vessels are absent from the Wood.
    Ann. Bot. 32. 503–513. Oct. 1918.

Other Papers

19. Numerous Reviews in "Botanical Abstracts" of articles in Botanical Journals.

20. Heredity and Education.
Reprinted from report of Sask. Ed. Assoc. 1916.
21. Modern Views on the Origin of Species.
Reprinted from Transactions of Sask. Naturalists Society. 1919.

J. S. DEXTER, Ph.D. (Col.)

1. On Coupling of Certain Sex-linked Characters in Drosophila.
Biol. Bull. 23. 183–194. Aug. 1912.
2. Mosquitoes Pollinating Orchids.
Science. N.S. 37. 867. June 1913.
3. Nabour's Breeding Experiments with Grasshoppers.
Amer. Nat. 48. 317–320. May 1915.
4. The Analysis of a Case of Continuous Variation in Drosophila.
Amer. Nat. 48. 712–758. Dec. 1915.
5. Inheritance in Orthoptera.
Amer. Nat. 52. 61–63. Jan. 1918.
6. Albino Vertetrates.
Science N.S. 52. 130. Aug. 1920.

A. E. CAMERON, M.Sc. (Manc.) M.A., D.Sc. (Aberd.)

1. Structure of the Alimentary Canal of the Stick-Insect, Bacillus Rossii Fabr., with a note on the Parthenogenesis of this species.
Proceedings of the Zoological Society of London, March 1912, pp. 172–182, 3 plates, 9 figures.
2. On the Life History of Lonchaea Chorea, Fabricius.
Transactions of the Entomological Society of London, September 1913, pp. 314–322, 1 plate, 8 figures.
3. General Survey of the Insect Fauna of the Soil within a limited area near Manchester. A Consideration of the Relationships between Soil Insects and the Physical Conditions of their Habitat.
Journal of Economic Biology, Vol. 8, No. 3, 1913, pp. 159–203, 2 plates including 30 figures and 3 text-figures.

3a—A Note on Two Species of Baroid Ichneumonidae Parasitic on a Species of Syrphid Larva.—The Entomologist, April 1913, pp. 130–131.

4. A contribution to a Knowledge of the Belladonna Leaf-Miner, Pegomyia hyoscyami, Panz., its Life History and Biology.
Annals of Applied Biology, Vol. 1, No. 1, 1914, pp. 43–76, 2 plates including 22 figures and 4 text-figures.
5. Potato Spraying and Dusting in New Jersey Experimental Control of Epitrix Cucumerina.
Bulletin of Entomological Research, Vol. VI, part 1, June 1915, pp. 1–21, 3 plates and 2 text-figures.
6. Some Experiments on the Breeding of the Mangold-Fly (Pegomyia hyoscyami, Panz.) and the Dock-Fly (Pegomyia bicolor, Wied.)
Bulletin of Entomological Research, Vol. VII, Part 1, May 1916, pp. 87–92, 2 text-figures.
7. The Insect Association of a Local Environmental Complex in the District of Holmes Chapel, Cheshire.
Transactions of the Royal Society of Edinburgh, Vol. LII, Part I., No. 2, pp. 37–78, 2 plates, 1917.
8. Relation of Soil Insects to Climatic Conditions.
The Agricultural Gazette of Canada, Vol. 4, No. 8, August 1917, pp. 663–669.

9. Life History of the Leaf-eating Crane-fly, Cylindrotoma splendens.
Annals of the Entomological Society of America, Vol. XI, No. 1, March 1918, pp. 67–89, 18 figures.

10. Some Blood-sucking Flies of Saskatchewan.
Agricultural Gazette of Canada, Vol. 5, No. 6, June 1918, pp. 556–561, 6 figures.

11. The Pear-Thrips and Its Control in British Columbia (Taeniothrips inconsequens)
Bulletin No. 15, Department of Agriculture, Entomological Branch, May 1918, pp. 1–51, 22 figures.

12. A contribution to the Knowledge of the Bot-flies, Gastrophilus intestinalis, De Geer; G. haemorrhoidalis L., and G. nasalis, L.
Bulletin of Entomological Research, London, Vol. IX, Pt. 2, pp. 91–106, 1 plate and 10 text-figures.

13. Warbles and Bots.
Proceedings of Quebec Plant Pathological Society, 1918, pp. 1–9.

14. Fossil Insects with Special Reference to those of the Tertiary Lake Deposits of the Similkameen Valley, British Columbia.
Proceedings of the Entomological Society of British Columbia, 1918; pp. 21–29.

15. Some Zoological Investigations Bearing upon Veterinary Science.
Published in Grain Growers Guide, 1918.

16. The Grasshopper Pest in the Prairie Provinces.
Published in the Agricultural Gazette, 1919.

17. The Occurrence of Gid in Sheep (Coenurus Cerebralis).
Agricultural Gazette of Canada, pp. 500–503, 4 figures. June 1920.

There are some minor contributions that have been made to current Scientific Journals such as Science and Nature (London).

W. P. FRASER, M.A. (Cornell).

1. The Rusts of Nova Scotia.
N.S. Institute of Science XII, 313–445. 1913.

2. Cultures of Some Heteroecious Rusts.
Mycologia 3, 67–74. 1911.

3. Cultures of Heteroecious Rusts.
Mycologia 4, 175–193. 1912.

4. Further Cultures of Heteroecious Rusts.
Mycologia 5, 233–239. 1913.

5. Notes on Uredinopsis mirabilis and other Rusts.
Mycologia 6, 25–28. 1914.

6. Over-wintering of the Apple Scab Fungus.
Science, N.S. 46, 280–282. 1917.

7. Culture of Heteroecious Rusts in 1918.
Mycologia 11, 129–133. 1919.

HULDA I. HAINING, M.A. (Sask.)

1. The Development of the Embryo of Gnetum.
Botanical Gazette, Vol. 70, 436–446. Dec. 1920.

A. G. McGOUGAN, B.A. (McGill) Ph.D. (Yale).

1. On the Emission of Electrons from Metals under the Influence of Alpha Rays.
   Amer. Journ. of Science, XXXIV. Oct. 1912.
   Phil. Mag., XXLV., P.474. 1912.
2. Some Properties of Metals under the Influence of Alpha Rays.
   Phys. Rev. N.S., XII 2. Aug. 1918.

E. L. HARRINGTON, B.A. (Mo.), M.S. (Harv.), Ph.D. (Chicago).

1. A Redetermination of the Cofficient of Viscosity of Air.
   Phys. Rev. N.S. VIII, 6. Dec. 1916.
2. Minor Articles on Teaching and Laboratory Methods.
   School Science and Mathematics.

T. THORVALDSON, B.A. (Man.), Ph.D. (Harv.).

1. Revision of the Atomic Weight of Iron. (Third paper).
   Analysis of Ferrous Bromide.
   By G. P. Baxter, T. Thorvaldson and V. Cobb. Journ. of Amer. Chem. Soc. Mar. 1911.
2. Revision of the Atomic Weight of Iron. (Fourth paper)
   The Atomic Weight of Meteoric Iron.
   By G. B. Baxter and T. Thorvaldson. Journ. of Amer. Chem. Soc. May 1915.
3. Revision of the Atomic Weight of Lead.
   The Analysis of the Lead Bromide. (Second paper)
   By G. P. Baxter and T. Thorvaldson. Journ. of Amer. Chem. Soc. May 1911.
4. New Thermo Chemical Method for Subdividing Accurately a Given Interval, on the Thermometer Scale.
   By T. W. Richards and T. Thorvaldson. Journ. of Amer. Chem. Soc. Jan. 1915.
5. Revision of the Atomic Weight of Lead.
   The Analysis of Lead Bromide and Chloride.
   By G. P. Baxter, F. L. Grover and T. Thorvaldson. Pro. Nat. Acad. of Sciences, Vol. 1, P.71. 1915.

R. J. MANNING, B.A. (Tor.), D.Sc. (Bristol).

1. Determination of Boric Acid.
   Journal of Society of Chemical Industry, Vol. XXV. 1906.
2. Estimation of Boric Acid and Borates in Foodstuffs.
   Journal of Society of Chemical Industry, Vol. XXVI. 1907.
3. Ethyl Tannate.
   Journal of the American Chemical Society, Vol. 32. 1910.
4. Zur Konstitutions frage des Tannins. (Constitutions of Tannins)
   Berichte 45, 2. 1912.
5. The Tannin of the Canadian Hemlock.
   Journal of the Chemical Society. June 1919.

S. BASTERFIELD, B.Sc. (Lond.), Ph.D. (Chicago).

1. Derivations of Ethyl Isourea Ether and Their Pharmacological Properties.
   Dissertation presented to the University of Chicago for Degree of Ph.D. 1920. (Not yet published).

G. H. LING, B.A. (Tor.), Ph.D. (Col.).

1. Proof that there is no Simple Group whose Order lies between 1092 and 2001, (with Professor G. A. Miller).
   American Journal of Mathematics, Vol. XXII, 1900.
2. Annuities.
   Canadian Chartered Accountant. April 1917.
3. Projective Geometry (Ginn & Co.).
   (In press) 1920.

L. L. DINES, M.A. (Northwestern), Ph.D. (Chicago).

1. A Method of Investigating Numbers of the Forms $6^k \pm 1$.
   Annals of Mathematics. April 1909.
2. The Highest Common Factor of a System of Polynomials in one Variable.
   American Journal of Mathematics. 1913.
3. Concerning Two Recent Theorems on Implicit Functions.
   Bulletin of the American Mathematical Soc. 1913.
4. The Teaching of Arithmetic.
   Sierra Educational Review. March 1914.
5. Complete Existential Theory of Sheffer's Postulates for Boolean Algebras.
   Bulletin of the American Mathematical Soc. 1915.
6. A Characteristic Property of Self-projective Curves.
   Annals of Mathematics. June 1916.
7. Concerning Preferential Voting.
   American Mathematical Monthly. Sept. 1917.
8. Projective Transformations in Function Space.
   Transactions of the American Math. Soc. 1919.
9. The Development of the Function Concept.
   School Science and Mathematics. Feb. 1919.
10. Systems of Linear Inequalities.
    Annals of Mathematics. March 1919.
11. Primary Classification of Projective Transformations in Function Space.
    (Submitted for Publication) 1920.

I. A. BARNETT, B.A., Ph.D. (Chicago).

1. Problems in the Calculus of Variations Invariant under a Special Group.
   Annals of Mathematics. April 1917.
2. A Short Course in Trigonometry for Navy Men. (With Professor Blumberg).
   U. S. Naval Training. Sept. 1918.
3. Note on the General Term in the Solution of Kepler's Equation by Means of Lafrange's Expansion.
   Washington University Studies. 1919.
4. Integro-Differential Equations with Constant Limits of Integration.
   Bulletin of the American Mathematical Soc. 1920.
5. Functionals Invariant Under One-parameter Continuous Groups of Transformations in the Space of Continuous Functions.
   Proceedings of National Academy of Science. 1920.
6. Differential Equations with Continuous Infinitude of Variables.
   (Submitted for Publication) 1920.

7. Linear Integral Equations (Translation from the Italian of Vivant) in Collaboration with Dr. Rider of Washington University. (Offered for Publication) 1920.

Not of Research character.

G. M. WILLIAMS, B.S.C.E. (Neb.).

Research Papers.

1. Errors in the Methods of Determining the Time of Setting of Cement. Presented at 1914 Convention of the American Society for Testing Materials. Published in Vol. XIV., 1914 Proceedings.
2. Test of Two Recent Theories for Proportioning Concrete. Engineering News-Record, June 12, 1910.
3. Flowability of Concrete and Its Measurement by Means of the Flow Table. Engineering and Contracting, Concrete, and Concrete Products. Engineering News-Record, May 27, 1920.
4. Some Determinations of the Stress-Deformation Relations for Concretes under Repeated and Continuous Loadings. Presented at 1920 Convention of the American Society for Testing Materials. Published in Vol. XX, 1920 Proceedings.
5. Are Abrams' and Edward's Theories Both Wrong? Canadian Engineer, Jan. 15, 1920.
6. Method of Determining Modulus Elasticity of Concrete. Discussion with original test data in Proceedings American Society for Testing Materials, Vol. XIX., 1919.

*7. A Logical Method for Determining the Concrete Making Value of Available Aggregates and Its Practical Application to the Production of Concretes of Pre-determined Quality in the Field. Presented to Edmonton and Calgary Branches of the Engineering Institute of Canada, March 1921.

Pamphlets.

1. Strength and other Properties of Concretes as affected by Materials and Methods of Preparation. Technologic Paper No. 58 of the U.S. Bureau of Standards, 1916. Joint author with R. J. Wig and E. R. Gates of same Bureau.
2. Investigation of the Durability of Cement Drain Tile in Alkali Soils. Technologic Paper No. 44 of the U. S. Bureau of Standards, 1915. Joint author with R. J. Wig, with the co-operation of S. H. McCrorry, Chief of Drainage Investigations, U. S. Dept. of Agriculture; E. C. Bebb, Engineer, U. S. Reclamatory Service; L. R. Ferguson, Engineer, Portland Cement Association.

3 Revision and Enlargement of Technologic Paper No. 44. Issued in 1917 as Technologic Paper 95, Bureau of Standards.

Articles.

1. How can Laboratory Tests of Concrete Materials Be Made of Greater Value to the Field Engineer and Contractor? Canadian Engineer, Jan. 29, 1920. Also in Engineering and Contracting, Concrete, and Cement Products.

2. Criticism of Method of Proportioning Concrete Employed on Work of Ontario Hydro-Electric Power Commission.
(*Note*:— Headline attached by editor, "Bureau of Standards Criticises Hydro's Method"), Canadian Engineer, Jan. 22, 1920.

3. Further Discussion of the Abrams Water-Cement Ratio Method of Proportioning Concrete.
Engineering News-Record, August 14, 1919.

Brief Articles and Discussion.

1. Discussion of the "Surface Area" Method of Proportioning Concrete and Proposed Method for using Pit Run Aggregates.
Proceedings Amer. Soc. for Testing Materials, Vol. XIX, 1919.

2. Discussion of Methods of Determining the Modulus of Elasticity of Concrete.
Engineering and Contracting, Nov. 24, 1920.

* 3. Discussion of Testing of Concrete in which large Aggregate is Used.
Engineering News-Record, Nov. 11, 1920.

* 4. Improper Method of Proportioning Pit Run Aggregates.
Engineering and Contracting, Jan. 5, 1921.

* 5. Gunite vs. Poured Concrete Floor Slabs.
Canadian Engineer, April 7, 1921.

* 6. Use of Wet Aggregates in Proportioning Concrete Mixtures.
Engineering News-Record, Feb. 17, 1921.

* Since joining staff.

MANLEY CHAMPLIN, M.S.A. (So. Dakota).

Research or Experimental.

1. Experiments with Wheat, Oats and Barley in South Dakota.
United States Department of Agriculture Bulletin No. 39.

South Dakota Experiment Station Bulletins.

No.	*Title.*
124.	Progress of Grain Investigations.
135.	Trials with Millets and Sorghums for Grain and Hay in South Dakota.
140.	Selection and Preparation of Seed Potatoes in the Season of 1912.
146.	Some Varieties and Strains of Wheat and Their Yields in South Dakota.
149.	Some Varieties and Strains of Oats and Their Yields in South Dakota.
151.	Trials with Sweet Clover as a Field Crop in South Dakota.
153.	Selecting and Breeding Corn for Protein and Oil in South Dakota.
155.	Selection and Preparation of Seed Potatoes, Size of Seed Piece and Bud Variation.
156.	Kaoliang, a New Dry Land Crop.
161.	Winter Grain in South Dakota.
162.	First Annual Report of Vivian Experiment and Demonstration Farm.
163.	Comparative Yields of Hay from Several Varieties and Strains of Alfalfa at Brookings, Highmore, Cottonwood and Eureka.
169.	Flax Culture in South Dakota.
174.	Sorghums for Forage in South Dakota.
176.	Potato Culture in South Dakota.
179.	Emmer in South Dakota.
180.	Root Crop Culture in South Dakota.
181.	Corn Culture in South Dakota.
183.	Barley Culture in South Dakota.

Books and Pamphlets.

1. Lessons in Field Management.
   (Copyrighted in U. S.).
2. Student's Guide for Study of Farm Crops.
3. Kubanka Wheat.

Articles for Periodicals.

1. Our Daily Bread.
2. I Have a Piece of Land.
   (A regular department of the Dakota Farmer issued semi-monthly for about two years.)
3. South Dakota Experiment Association Column.
   (A department of the Dakota Farmer devoted to the South Dakota Experiment Association for about three years.)

R. HANSEN, M.Sc. (Ill.).
Research Papers.

1. Is Symbiosis Possible Between Legume Bacteria and Non-Legume Plants?
   By T. J. Burrill and Roy Hansen. Illinois Experiment Station Bulletin 202, 1917.
2. Cross-Inoculation Studies with the Nodule Bacteria of Lima Beans, Navy Beans, Cow-peas and Others of the Cow-pea group.
   By A. L. Whiting and Roy Hansen. Soil Science, Vol. X., No. 4, October, 1920.
3. Note on the Flagellation of the Nodule Organisms of the Leguminosae. Science New Series, Vol. L., No. 1303, 1919.
4. The Nodule Bacteria of Leguminous Plants.
   By F. Lohnis and Roy Hansen. Journal of Agricultural Research, 1921.

Books and Pamphlets.

1. Chapter on Soils in John Bracken's Dry Farming in Western Canada, 1921.

Articles and Periodicals.

1. Fundamental Principles of Soil Fertility.
   Delivered before the Commission of Conservation (Canada), in 1920, and to be published in their report.
2. Soil Drifting in Saskatchewan.
   Given at meeting of Western Canadian Society of Agronomy. To be published by Alberta Government in the Proceedings of the Society.
3. Symbiotic Nitrogen Fixation by Leguminous Plants with Special Reference to the Bacteria Concerned.
   Given at meeting of Western Canadian Society of Agronomy, and to be published in their Proceedings.

A. E. POTTS, B.Sc. (Edin.), M.S.A. (Cornell).
Research Papers.

1. Sampling of Milk.
2. The Inheritance of Color in Shorthorn Cattle.

L. M. WINTERS, M.S. (Ames).
Research Papers.

1. Blood-lines back of Leading Hereford Show-ring Winners.
   American Hereford Journal, Aug. 15, 1920.

2. The Inheritance of Show Type.
   The Field Illustrated, Sept. 1920.
3. A Study in Bulls.
   The Journal of Dairy Science. (In Press)
4. A Study in Dairy Bulls.
   The American Society of Animal Production. (In Press)

Articles.

1. Feeding and Managing Pure Bred Beef Calves.
   The Farmer, Aug. 14, 1920.
2. Advanced Registration for Beef Cattle.
   The Breeders' Gazette, Sept. 16, 1920
3. Bull Associations and Community Breeding.
   Farm and Ranch Review, Oct. 5, 1920.
4. Scrub and Purebred Scrub Sires Must Go.
   The Farmers' Advocate, Nov. 18, 1920.
5. Handling the Stock During the Breeding Season.
   The Grain Growers Guide, Nov. 10, 1920.

A. R. GREIG, B.Sc. (McGill).

Research Papers.

1. Paper on the Value of Straw Gas.
   Delivered before the Engineering Institute of Canada, Sask. Branch, Nov., 1919.

Books and Pamphlets.

(B. C. Farm Buildings Series.)

1. Combinations or General Purpose Barns.
2. Dairy Barns, Milk and Ice Houses.
3. Beef Cattle Barns.
4. Horse Barns.
5. Sheep Barns.
6. Piggeries and Smoke Houses.
7. Poultry Houses.
8. Implements Sheds and Granaries.
9. Silos and Root Cellars.
10. Farm Houses.

E. A. HARDY, B.S.A. (Ames).

1. Make and Break Ignition System Test.
   Published in Farm Mechanics.
2. Tractor Engine Lubrication.
   Published in Farm Mechanics.
3. The Automobile Storage Battery.
   Published by Nor' West Farmer.
4. Selection, Care and Operation of the Farm Tractor.
   Paper for Extension Department.

University of Saskatchewan

GENERAL BALANCE SHEET FOR THE YEAR ENDING JUNE 30th, 1921

ASSETS

CAPITAL ASSETS			
Site, Buildings and Equipment		$2,487,257.55	
Investments		28,871.12	
			$2,516,128.67
CURRENT ASSETS			
Cash on Hand	$445.16		
Cash—Petty	160.00		
Cash—Bursar's Deficit	11.19		
Cash—Savings Bank	527.74		
		$1,144.09	
Dominion Grant Receivable—Aid to Agriculture		27,300.00	
Accounts Receivable—Sundry	$15,436.37		
Advances	650.00		
		16,886.37	
Inventories—			
Provisions	$ 4,332.87		
Lumber, Etc.	10,777.86		
Bookstore	8,522.98		
Sundry	8,759.05		
		32,392.76	
Surplus Live Stock		10,261.20	
Unexpired Insurance		3,314.05	
Interest Accrued		648.63	
Rent of Siding, Unexpired		131.95	
Investment, Pension Fund		38,470.78	
Deficit, General Fund		33,413.65	
			163,163.48
DEFERRED ASSETS			
Provincial Treasurer, Capital Account			321,213.14
			$3,000.505,29

LIABILITIES

CAPITAL LIABILITIES			
Over-Invested Funds		$ 71 12	
CAPITAL SURPLUS			
Provincial Gov't Grants	$2,334,452.37		
Revenue Account	152,805.18		
Pharmaceutical Society	15,000.00		
Copeland Scholarship	1,800.00		
Khaki University	12,000 00		
		2,516,057.55	
			$2,516,128.67
CURRENT LIABILITIES			
Bank Overdraft	$35,940.82		
Bills Payable	25,000.00		
Accounts Payable	27.604.87		
Wages Payable	28.76		
Unclaimed Funds	982.37		
Bateman Memorial	1,500.00		
Can. Engineering Inst.	4,895.46		
		$95,952.28	
Current Appropriations		27,300.00	
Reserves—Bad and Doubtful Debts	$ 158.46		
Reserves—Pension	39,752.74		
		39,911.20	
			163,163.48
DEFERRED LIABILITIES			
Capital Appropriations			321,213.14
			$3,000,505.29

I hereby certify that the above Balance Sheet is drawn up so as to exhibit the financial standing of the University as at the 30th June, 1921, according to the books of accounts kept by the Institution, and that the said books of accounts and vouchers have been duly audited. The inventories included among the assets are taken from inventory sheets certified by the Heads of Departments.

Regina, November 22nd, 1921. Provincial Auditor.

University of Saskatchewan

CAPITAL ACCOUNT FOR THE YEAR ENDING JUNE 30th, 1921.

DISBURSEMENTS

	To 30th June, 1920	*During Period*	*Total*
UNIVERSITY			
Site	$ 91,111.44		$ 91,111.44
Improvements to Grounds	26,297.17	$ 7,429.69	33,726.86
Buildings	1,583,018.41	214,199.02	1,797,217.43
Equipment	208,789.06	55,785.14	264,574.20
FARM			
Lands	79,585.36	1,486.43	81,071.79
Fencing	11,392.28	2,849.80	14,242.08
Buildings	112,480.82	8,078.98	120,559.80
Implements, Etc.	19,692.67	1,581.08	21,273.75
Live Stock	45,438.80	18,041.40	63,480.20
	$2,177,806.01	$309,451.54	$2,487,257.55
INVESTMENTS			
Mortgage Receivable	$ 12,000.00		
National Trust Co.		$ 12,000.00	$ 12,000.00
Dom. War Loan—Pharmacy Repaid Account Over-Investment	3,072.73	66.55	3,006.18
Dom. War Loan—Copeland Repaid Account Over-Investment	526.35	11.00	515.35
Victory Bonds—Copeland	194.00		194.00
C.N.R.	1,155.59		1,155.59
Union Bank Savings		12,000.00	12,000.00
	$2,194,754.68	$333,189.85	$2,516,128.67

RECEIPTS

	To 30th June 1920	*During Period*	*Total*
Provincial Gov't Grants	$2,018,561.77	$285,909.80	
		29,980.80	$2,334,452.37
Current Account	129,263.44	23,541.74	152,805.18
	$2,147,825.21	339,432.34	$2,487,257.55
ENDOWMENTS			
Mortgage Paid		$ 12,000.00	
Pharmaceutical Society	$ 15,000.00		$ 15,00.00
Profit on Transfer of Bonds		66.55	
Over-Investment—Pharmacy			6.18
Copland Scholarship	1,800.00		1,800.00
Profit on Transfer of Bonds		11.00	
Over-Investment—Copland			64.94
Khaki University		12,000.00	12,000.00
	$2,164,625.21	$363,509.89	$2,516,128.67

University of Saskatchewan

CURRENT REVENUE AND EXPENDITURE ACCOUNT FOR THE YEAR ENDING JUNE 30th, 1921

To Administration		$ 25,597.80	
Instruction		191,100.81	
Library	$7,403.07		
Less Transfer to Capital	4,049.44		
		3,353.63	
Laboratories		22,941.66	
Buildings		80,545.50	
Experimental Plots (Balance)		13,623.77	
Research	$13,429.40		
Less Transfer to Capital	872.08		
		12,557.32	
Live Stock, Experiments and Instruction		7,200.00	
Live Stock—Loss on Stallion		3,997.08	
Extension Work		40,293.60	
Dominion Aid to Agriculture		30,853.07	
General Expenses		18,270.93	
College Farm—Balance		25,294.74	
Farm Boarding-House—Balance		376.19	
Bookstore—Balance		1,208.95	
Reserve for Bad and Doubtful Debts		100.00	
Interest		3,115.97	
			$480,431.02
Balance, Revenue over Expenditure			29,093.36
			$509,524.38
To Deficit brought forward from previous year			$38,965.27
Expenditure on Capital Account			23,541.74
			$62,507.01
EXTERNAL REVENUE			
By Dominion Gov't Grant—			
Aid to Agriculture		$ 13,354.75	
Provincial Government—			
Succession Duties	$ 21,207.57		
Corporation Taxation	122,499.56		
Education	122,000.00		
Agriculture	46,333.32		
Research	14,073.34		
Special	137,000.00		
		463,113.79	
Nursing Housekeepers Grants—			
Canadian Red Cross	$1,400.00		
Sask. Reg'd Nurses' Association	500.00		
		1,900.00	
			$478,368.54

INTERNAL REVENUE

By Fees		$24,573.25	
Rent		400.00	
Interest		1,432.28	
University Hall (Balance)		4,520.26	
Stock Adjustments—			
"A" Over	$239.04		
"B" Short	8.99		
		230.05	
			31,155.84
			$509,524.38
By Balance brought down			$29,093.36
Balance, Expenditure over Revenue			33,413.65
			$62,507.01

University of Saskatchewan

COLLEGE FARM

STATEMENT OF REVENUE AND EXPENDITURE
YEAR ENDING JUNE 30th, 1921

DEBIT

Seed	$ 1,987.89	
Feed	19,847.28	
Salaries and Wages	15,623.11	
Gasoline and Oil	1,167.81	
Maintenance, Renewals and Repairs	6,443.14	
Stock, for fattening	1,595.97	
Dundurn Farm	1,254.46	
Poultry Department	9,162.88	
Garden Department	544.40	
Miscellaneous	2,030.60	
		$59,657.54

CREDIT

Sales—		
Milk	$3,085.63	
Grains and Fodder	6,211.91	
Garden Produce	628.96	
Meat	3,035.79	
Poultry	7,550.31	
Live Stock	8,010.78	
Miscellaneous	428.17	
		$28,951.55
Live Stock—Increase		2,876.00
Inventory—		
Feed	$1,979.40	
Seed	56.00	
Meat in Storage	499.85	
		2,535.25
Balance to General Fund		25,294.74
		$59,657.54

FARM BOARDING-HOUSE

Debit

Salaries	2,624.67	
Provisions	3,113.40	
Upkeep	657.43	
		$6,395.50

Credit

Revenue	$6,019.31
Balance to General Fund	376.19
	$6,395.50

UNIVERSITY HALL

Debit

Salaries	$17,081.93	
Provisions	27,823.17	
Upkeep	10,674.05	
		$55,579.15
Balance to General Fund		4,520.26
		$60,099.41

Credit

Revenue	$60,099.41

UNIVERSITY BOOK-STORE

Debit

Inventory—July 1st, 1920	$ 4,526.72	
Purchases for year	19,164.78	
Salaries	1,372.50	
Miscellaneous Expense	152.79	
		$25,216.79

Credit

Sales for year	$15,484.86	
Inventory—June 30th, 1921	8,522.93	
Balance to General Fund	1,208.95	
		$25,216.79

University of Saskatchewan

COMPARATIVE STATEMENT OF REVENUE AND EXPENDITURE

EXPENDITURE (*Current*)	Year 1919–20	Year 1920–21
Administration	$ 18,815.91	$ 25,597.80
Instruction	134,269.68	191,100.81
Library	5,311.98	3,353.63
Laboratories	15,125.60	22,941.66
Buildings and Grounds	63,922.24	80,545.50
Experimental Plots	7,059.53	13,623.77
Extension Dept.	35,045.19	40,293.60
Dominion Aid to Agriculture	31,575.54	30,853.07
Live Stock, Experiments and Instructions	3,500.00	7,200.00
General Expense	19,130.13	18,270.93
Research	11,866.97	12,557.32
Interest	5,589.51	3,115.97
Live Stock Loss	...	3,997.08
Reserve for Bad and Doubtful Debts	100.00	100.00
College Farm—Deficit	25,978.62	25,294.74
Farm Boarding House—Deficit	613.50	376.19
University Bookstore—Deficit	...	1,208.95
Stock—Shortage	225.58	...
	$378,129.98	$480,431.02
REVENUE (Internal)		
Fees	$22,255.75	$24,573.25
Rent	145.00	400.00
Interest	1,311.09	1,432.28
University Hall—Surplus	4,110.43	4,520.26
Bookstore	1,425.48	...
Stock—Overage	...	230.05
	$29,248.75	$31,155.84